POWER AMPLIFIER

MAX SERIES

MAX860/1500/2500

USER'S MANUAL

PHONIC

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!!! WARNING !!!

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

Avoid exposing rain, water, or any form of liquid to this unit. IMMEDIATELY unplug its power cord from its power source and contact a qualified technician when the unit is exposed to rain, water, or any form of liquid.

Keep the unit is away from heat sources like radiators, heat registers, stoves and etc.

ALWAYS have a qualified technician present when repairing or modifying this unit.

The arrowhead lightning flash symbol within an equilateral triangle is intended to alert you to the presence of uninsulated "dangerous voltage" inside the enclosure that may be sufficient to constitute a risk of shock.

The exclamation point within an equilateral triangle is intended to remind you to the presence of important operating and maintenance instructions in the literature accompanying the product.

!!! CAUTION !!!
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER OR THE BACK OF THE UNIT.

No user-serviceable parts inside. Always contact a qualified technician for repair or modification.

DO NOT open, modify, or disassemble the unit without a qualified technician present. Any change or repair of the unit requires the present of a qualified technician in order for the warranty to remain effective.

Clean the unit with damp cloth and dry brush. No other solvents are recommended for cleaning. Routine cleaning and proper maintenance guarantee best performance from the unit.

Carefully packed at the manufacturing site, the packing box is designed to protect the unit from rough handling. Please carefully examine the content inside the package and make sure the unit is well, undamaged.

Notify your dealer and the shipping company immediately when you find the unit damaged from shipping. Claims for damage or replacement would only be granted when reported properly and in a timely manner.

Use damp cloth or dry brush to clean the unit. **DO NOT** use any other solvents for cleaning. Good care and maintenance of your unit will prolong your unit's operational life and insure its optimal performance.

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INTRODUCTION

Thank you for purchasing a Max series power amplifier. Based on years of experience in designing and manufacturing professional audio equipment, we at PHONIC designed this power amplifier for those who need an extremely powerful, reliable and sturdy amplifier with a small footprint. Taking advantage of its huge heat sink as well as its variable speed fan that auto-adjusts fan speed depending on the temperature of the machine during operation, Max series power amplifier can only promise to perform at its best. Its professional quality output and its sturdy case design make this unit great for various locations like churches, concert tours, stages, disco, pubs, or any place that requires amplifier installation.

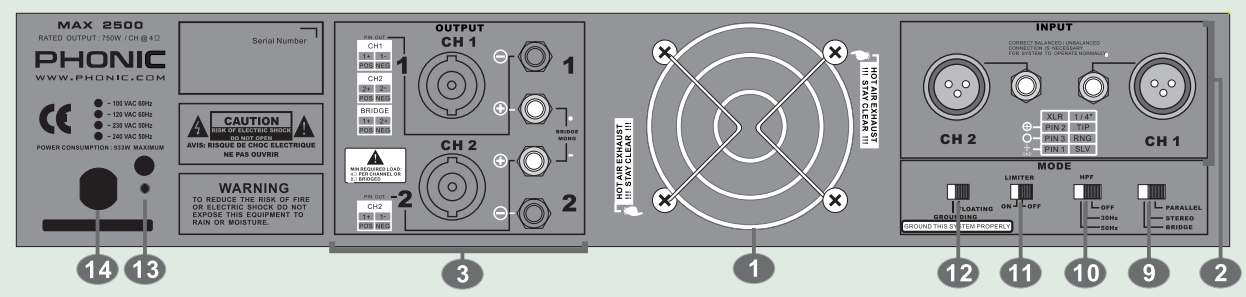
This unit is designed with great care and great attention to details, so please read this manual carefully. Look after it and keep it in a safe place for future reference.

FEATURES

- Up to 1500 watt with only 2U footprint
- Output: 300W for Max 860, 450W for Max 1500 and 750W for Max 2500
- High current toroidal transformer allowing high power output with low noise and low distortion
- Built in limiter with a button allowing user to disable limiter's function
- Selectable high pass filter at 30Hz or 50Hz for reducing distortion and protecting speakers
- Balanced XLR-TRS combo input jack
- Binding post and speakon outputs
- Front mounted gain controls for easy access
- Signal and Peak LED indicators to monitor performance
- Protection: short circuit, thermal, subsonic, RF protection, output DC offset, power on/off muting

GETTING STARTED

- Check the AC voltage before connecting the power plug to the outlet. Make sure the AC power supply shares the same voltage used in your country (For example, while some countries use 100V, others use 120V, 230V, or 240V). Proper grounding prevents user from experiencing electrical shock.
- Before turning on the power, make sure gains are turned down to prevent other equipment from harm.
- Check your cables regularly and label each end clearly for easy identification.
- Always turn off the power before connecting to and disconnecting from the unit.
- NEVER use solvents to clean the unit. Clean it with a soft and damp or dry cloth.



INSTALLATION

MOUNTING THE UNIT

Designed to fit into a standard 19-inch equipment rack, this unit only takes up 2-rack space. Secure this unit with 4 rack-mount screws and cup washers. In general, power amplifiers usually are heavier than any other audio equipment, so when installing this unit onto a rack, begin placing it from the bottom of the rack. Leave 1-rack space between power amplifiers to guarantee better cooling (See Figure 1).

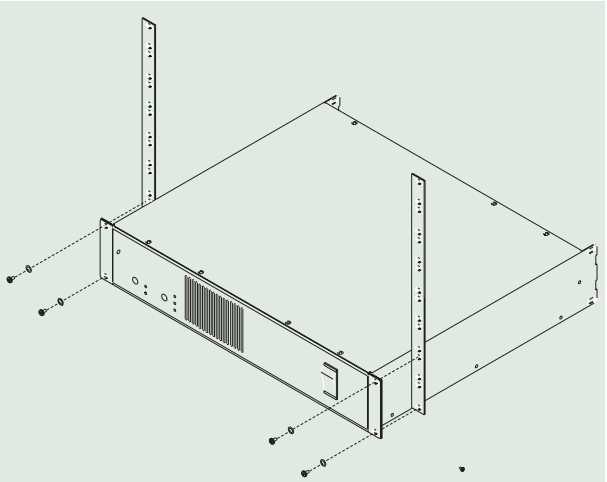
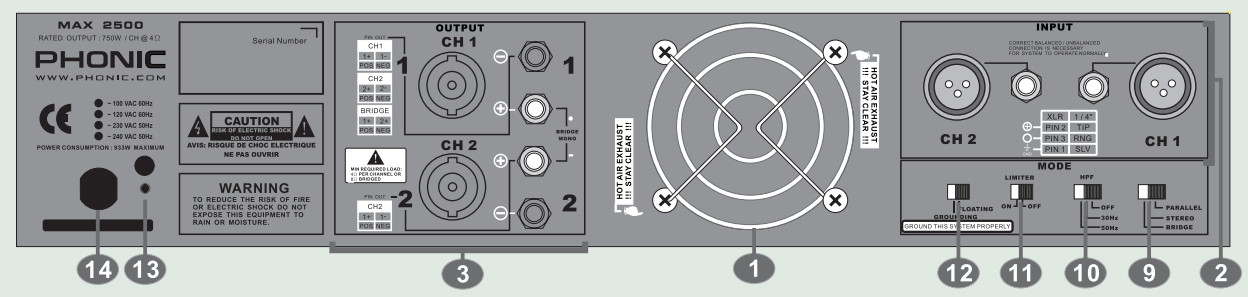


Figure 1 Rack Mount

1 HEAT VENTILATION

This unit comes with variable speed fan that auto-adjusts fan speed depending on the temperature of the machine during operation. Front to back air-flow is how heat leaves the unit. **!!! SO DO NOT PLACE ANY OBJECT THAT MAY PREVENT HEAT FROM EXITING THE UNIT FROM ITS BACK VENT !!!**



CONNECTIONS

2 INPUT

With balanced XLR and TRS 1/4" input jacks, user could use either XLR or TRS line input jack for connection. These input jacks accept balanced as well as unbalanced input. When sending unbalanced signal, the Ring and the Sleeve of the TRS jack must be connected, the 3rd pin and the 1st pin of the XLR connector should be connected as well, or simply just use a TS phone jack for making the connection (See Figure 2).

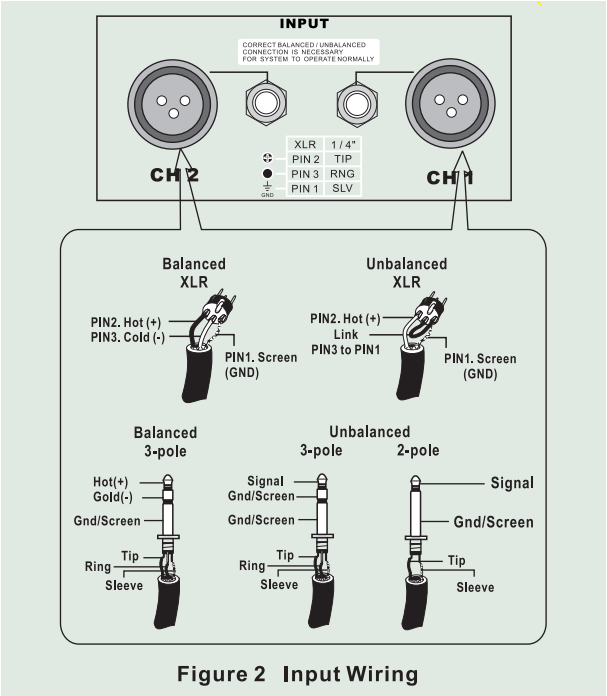


Figure 2 Input Wiring

3 OUTPUT

Binding posts and speakon connectors make up the unit's output section. Loudspeakers can easily be connected using banana plugs, spade lugs, bare wires or speakon connector. More people prefer using speakon than other connectors because it's the least likely to be disconnected by accident or electrical shock. Because speakon comes with four wires inside, you can connect to two speakers with only one channel output. Becareful when making connections since improper connecting could cause the unit to short circuit. The minimum impedance setting for STEREO and PARALLEL operation is 4ohm while 8ohm is the minimum setting for BRIDGE MONO (See Figure 3).

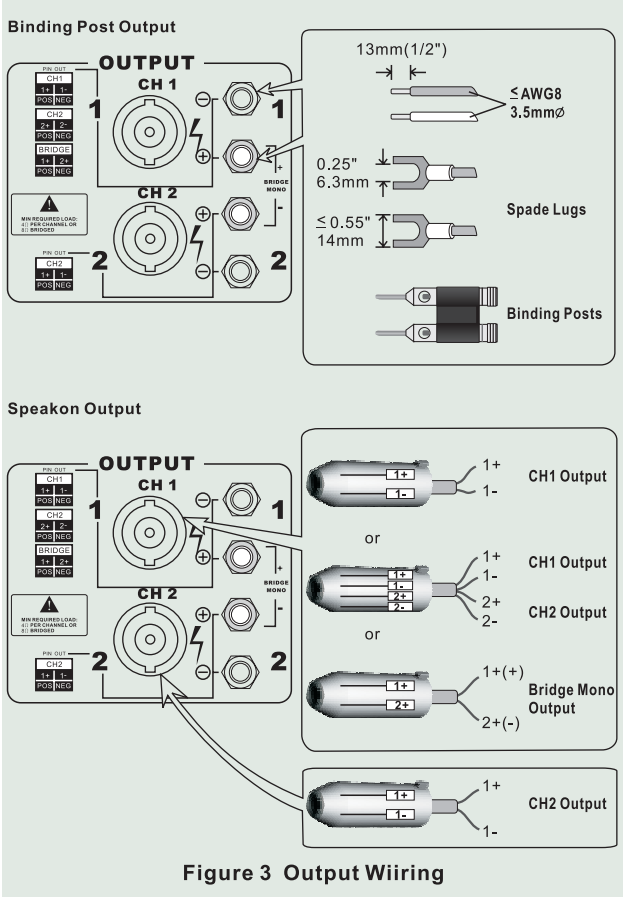
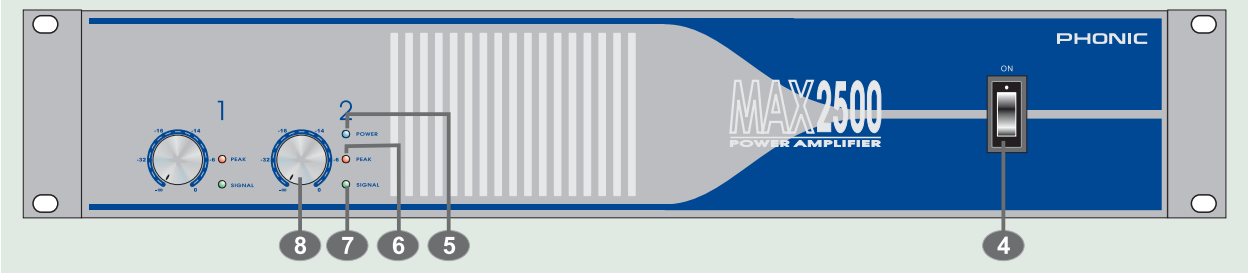


Figure 3 Output Wiiring



OPERATION

FRONT PANEL DESCRIPTION

4 POWER SWITCH

This switch turns on the power of the unit. Remember to turn down the gain controls before powering on or off this unit, even though it comes with POWER ON / OFF MUTING feature. In general, power amplifier should be the last audio equipment to be powered on, and the last one to be powered off in a PA system.

5 POWER LED

The blue LED comes on when power is on.

6 PEAK LED

When the input signal level becomes too high, causing input signal to loss definition and to distort, this red LED comes on. When this happens, turn down the gain control until the PEAK LED doesn't come on constanty or remain on continously.

7 SIGNAL LED

Every channel comes with a signal LED, allowing user to monitor signal level. A minimum level of -30dBu is required for the LED to go on.

8 GAIN CONTROLS

These two rotary knobs control the signal level of the input. Center detented control allows precise volume setting. Slowly turn the knob clockwise to increase input level, but make sure that PEAK LED will not remain on or blink constantly.

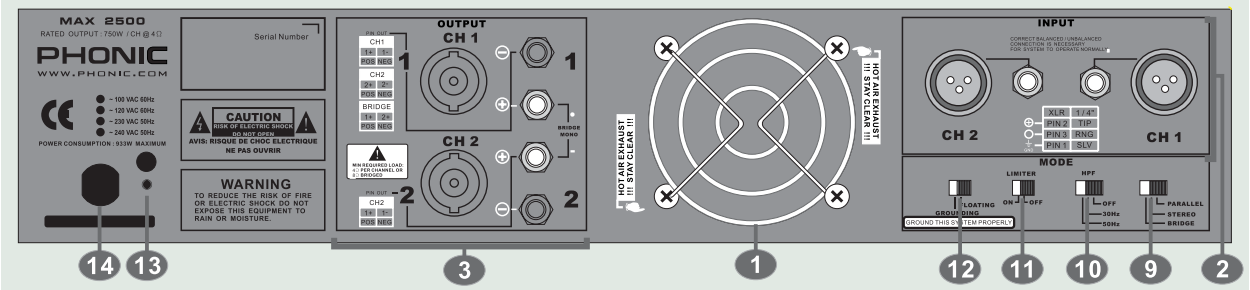
REAL PANEL DESCRIPTION

9 PARALLEL / STEREO / BRIDGE MONO OPERATION MODE

There are three operation modes for different use. To avoid damaging your PA system, remember to first power off the unit before switching from one mode to the other.

PARALLEL

Switch to PARALLEL mode, the input signal of Channel 2 parallels the input signal of Channel 1, so only one input jack is needed for the signal source. While Channel 1 input is being used for source, Channel 2 input can be used to extend the source signal to other audio equipment, for example, another power amplifier. Even though the input signal of both channels parallels each other, the output level of each channel is determined by its own independent gain controls. So the two channels sharing the same signal do not share the same output level (See Figure 4).



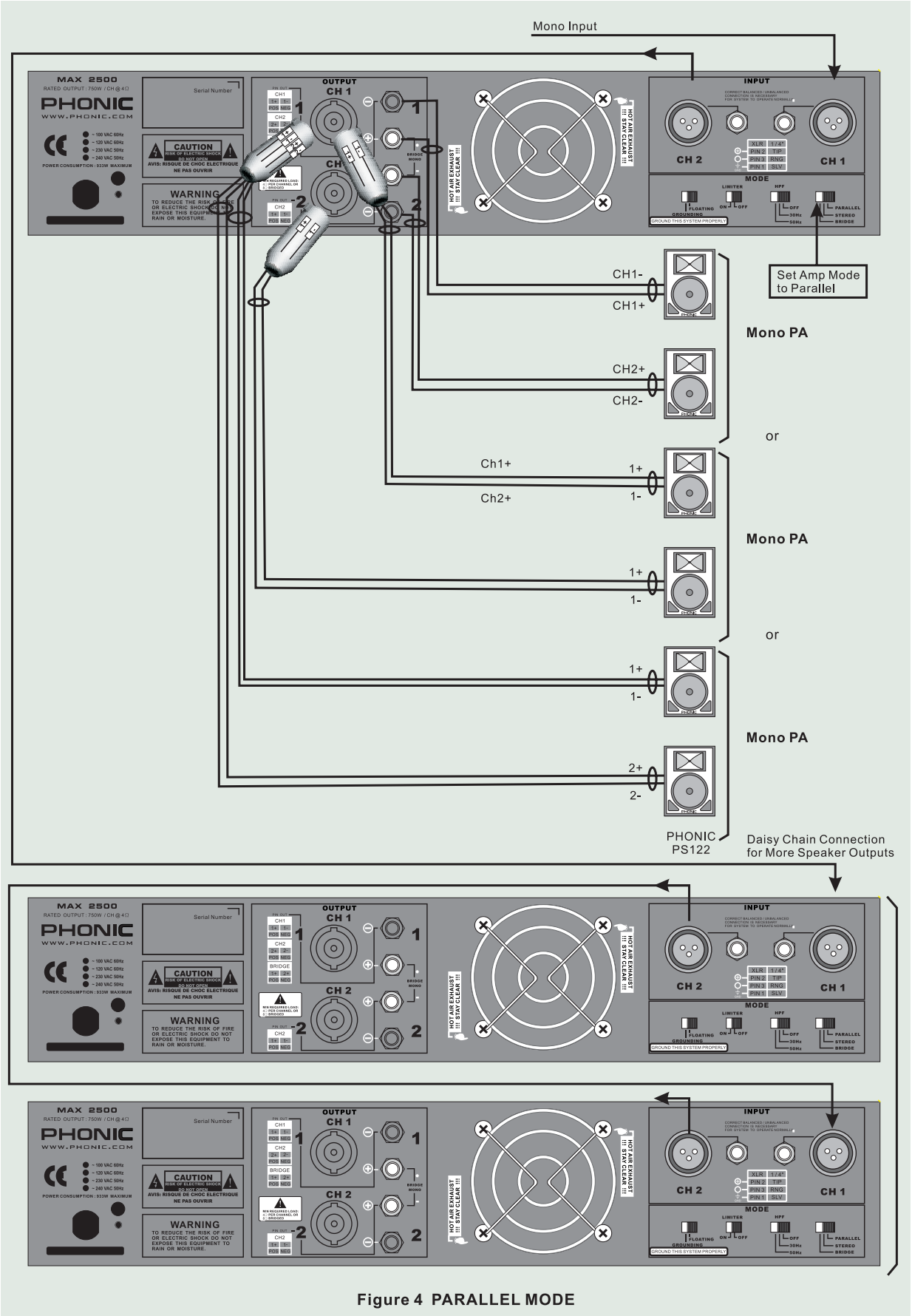


Figure 4 PARALLEL MODE

STEREO

STEREO mode is the most frequently used mode among the three. Each channel is independent of the other, carrying its own input signal, with its own gain control. Stereo mode comes in left and right channels (See Figure 5).

A) When one channel is assigned for left channel, make sure the other channel is assigned for the right.

B) User can use the unit for mono output, with one as main and the other as monitor.

C) This power amplifier can also be used for bi-amplification. One channel for driving low frequencies while the other for driving high frequencies.

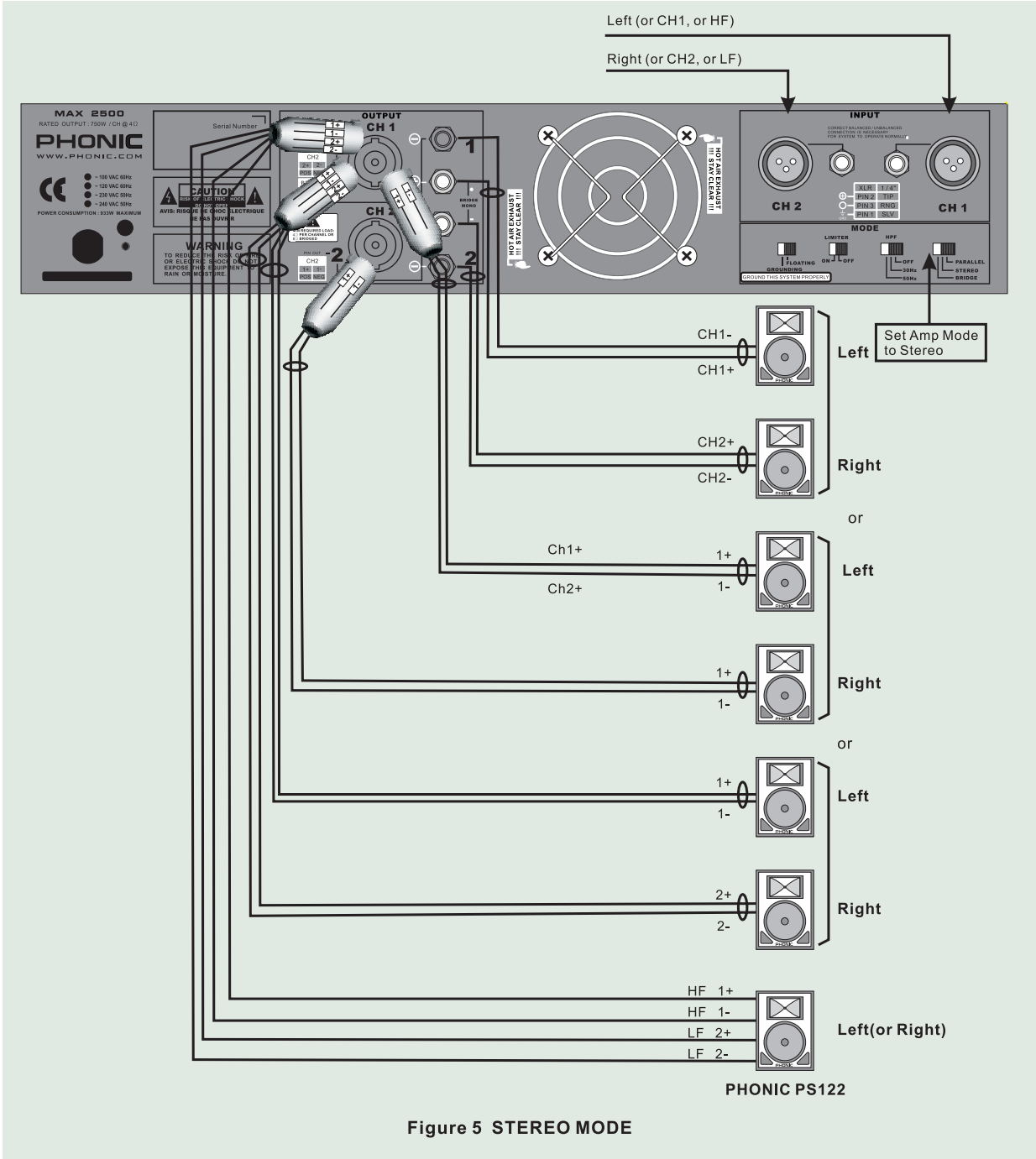


Figure 5 STEREO MODE

BRIDGE MONO

This mode is for those who need high level output. It combines the power of both channels to produce the maximum amount of power the unit can handle. Make sure your speaker can handle higher wattage this mode offers. Remember, the minimum impedance requirement is 8-ohm. When bridge mono, make sure only Channel 1 input is in use. When using speakon, treat PIN 1+ as the "+" and PIN 2+ as the "-"; when using binding posts, treat Channel 1 + as the "+" and Channel 2 + as the "-". Do not use Channel 2's speakon output in this mode. When bridge mono, the gain control of Channel 1 controls the total level output (See Figure 6).

WARNING: Bridge mono operation produces higher current output than the other two operations, thus make sure the gain is set at the proper level and speakers being used can handle the wattage amplifier produce. Proper attention to wiring is greatly needed to prevent experiencing electric shock.

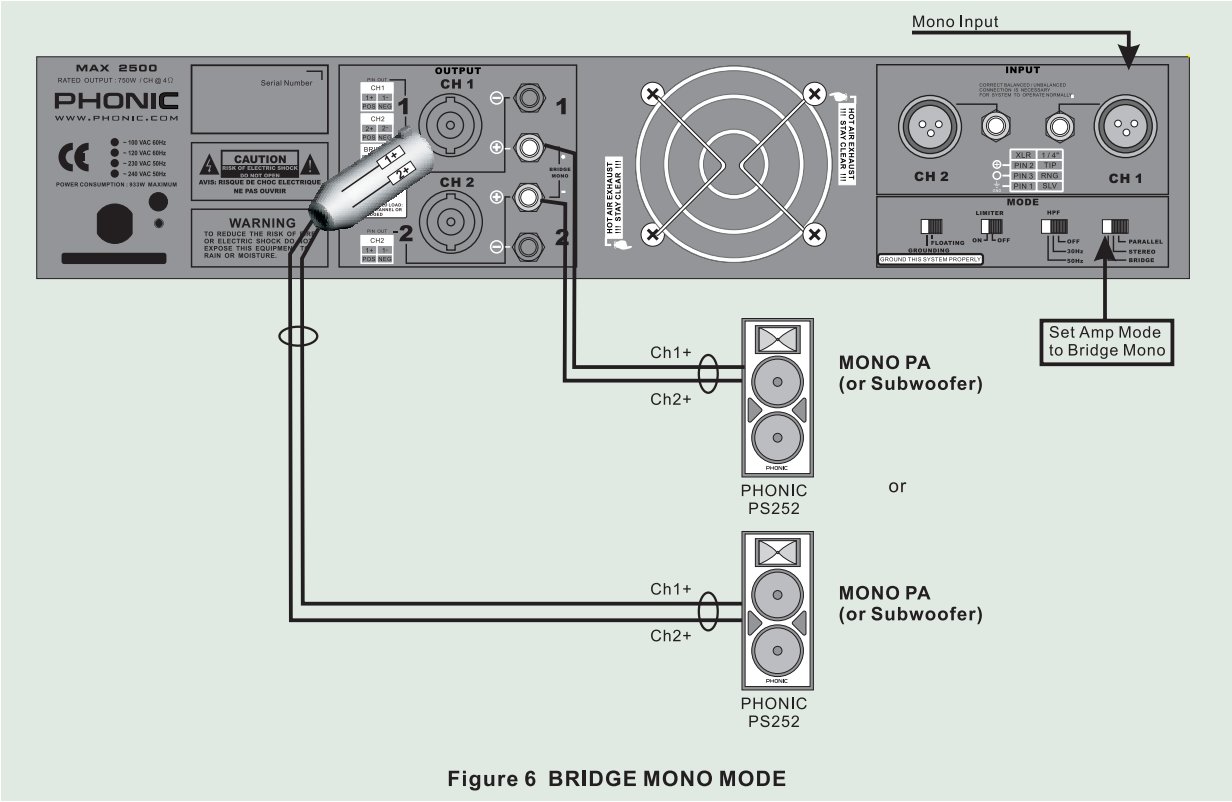
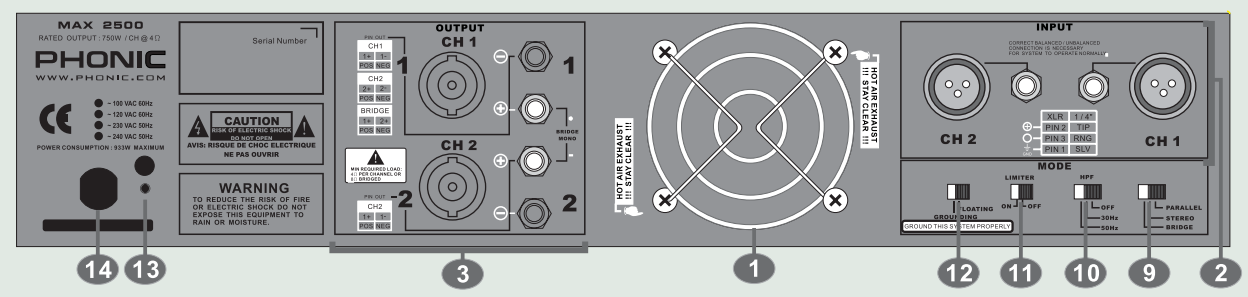


Figure 6 BRIDGE MONO MODE



10 HIGH PASS FILTER

With this filter, any frequency below 30Hz or 50 Hz is left out, not reproduced by the amplifier. This way, speakers less efficient and effective in reproducing low frequencies can be protected. This also allows such speakers to perform better.

11 LIMITER ON/OFF

This switch turns on or off the built-in limiter. When the input signal level becomes too high, causing amplifier to loss definition and to distort. Limiter helps prevent signal from losing definition and becoming distorted by automatically decrease signal level for guaranting maximum dynamic range.

12 GROUNDING – FLOATING SWITCH

This switch allows user to choose between circuit or chassis grounding for resolving any grounding conflict. Under normal use and for safty, such switch should be in the “grounding on” position. When grounding loop and hum occur, try switching to “floating.” When the hum is gone, it means the common ground is on the other equipment.

13 CHASSIS GROUNDING CONNECTING POINT

To avoid the possibility of ground loop, this unit comes with chassis grounding point allowing it to be connected to other units for sharing a common grounding.

14 POWER CORD

This cord draws electricity from power outlet. Near by it, there is an indicator that tells you what voltage your unit operates in. Check the AC voltage before connecting the power plug to the outlet. Make sure the AC requirement shares the same voltage used in your country (For example, while some coutries use 100V and 120V, others use 230V and 240V).

PROTECTIONS

The unit comes with many circuitry protection features for preventing it and speakers it's connected to from harm.

SHORT CIRCUIT: When speakers short circuit, this feature protects the amplifier by cutting off the output current to the speakers.

THERMAL: Heat is created during high level output – especially when during bridge operation. The unit comes with variable speed fan that auto-adjusts speed depending on the temperature of the machine during operation. However, for some reason the unit could not effectively vent out excessive heat, this feature would protect the unit from over-heating by shutting its power off.

OUTPUT DC OFFSET: When direct current enters to the connection between the power amplifier and speakers, it hurts the speakers by causing drivers and cones to work under stress. This feature prevents this from happening by cutting off the output current to the speakers when such situation happens.

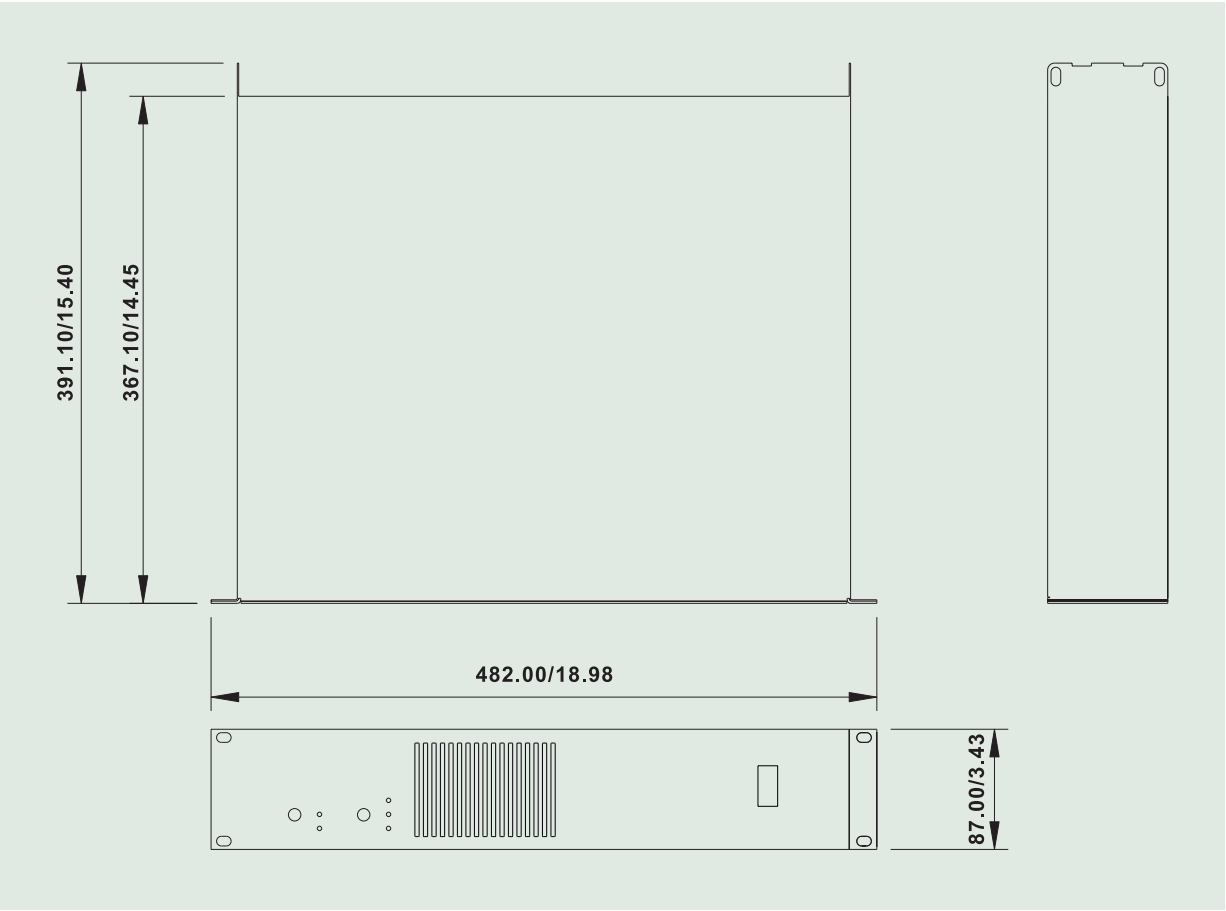
POWER ON / OFF MUTING: There is a two to three second delay before the unit sends out any signal. During this 2-3 seconds, the system will be on mute, no signal exist this unit.

SUBSONIC: Frequencies below 10Hz contain high level of energy that can be harmful and stressful for many speakers. Since normal human listening range from 20Hz to 20KHz, this unit comes with a feature that helps filter out any frequency that is below 10Hz to prevent speakers from harm.

RF PROTECTION: Radio Frequency is everywhere. This feature prevents radio frequency interference by filtering out frequency signal that's above 200KHz. This help prevent radio program signals from entering this unit.

DIMENSIONS

MAX series share the same dimensions.



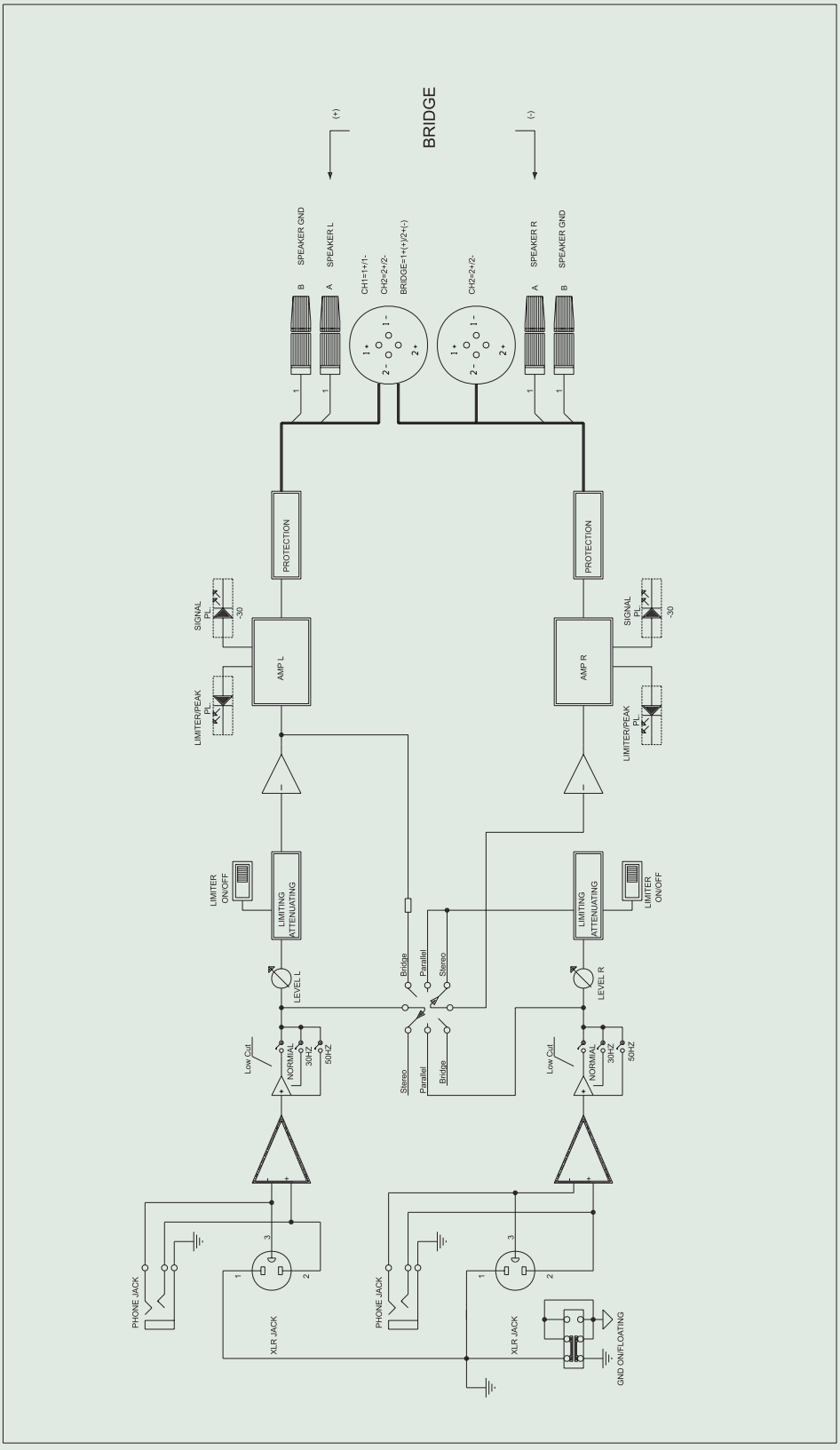
Measurements are shown in mm/inch.

SPECIFICATIONS

MAX SPECIFICATIONS	MAX-860	MAX-1500	MAX-2500
Stereo Mode (driving both channels)	Continuous Average Output Power Per Channel		
8Ω EIA 1kHz 0.1%THD	200W	280W	500W
4Ω EIA 1kHz 0.1%THD	300W	450W	750W
Bridge Mono Mode	Continuous Average Output Power		
8Ω EIA 1kHz 0.1%THD	600W	900W	1500W
All Models			
Output Circuitry	Class H		
Input sensitivity @ 8Ω	1.15v (+3.4dBu)		1.23v (+4.0dBu)
Distortion(SMPTE-IM)	<0.01%		<0.02%
Noise (unweighted 20Hz-20KHz below rated output)	100dB		
Damping Factor	>300 @ 8Ω		
Frequency Response	20 Hz-20KHz, ±0/-1dB -3dB points: 5Hz-50KHz		
Input Impedance	20 K Ω balanced, 10 K Ω unbalanced		
Cooling	Continous variable-speed fan, front-to-rear air flow		
Connectors (each channel)	Input: XLR, TRS Output: Speakon™ and binding posts		
Indicators	Power: Blue LED; SIGNAL: Green LED; PEAK: Red LED,		
Controls Front panel Rear panel	CH1 & CH2 GAIN knobs with 41 detents Slide switches: Limiter On/Off; Operation mode: Parallel, Stereo, Bridge Mono Grounding / Floating and Selectable low cut filter at 30Hz and 50Hz		
Amplifier Protection	Short circuit, thermal, subsonic, RF protection, Output DC offset, Power on/off muting		
Gain	32x (30dB)	40x (32dB)	50x (34dB)
Power Comsuption	375W	560W	933W
Dimensions (WxHxD)	482.6 x 89 x 415 mm (19" x 3.5" x 15.9")		
Weight	15.9 kg (35 lbs)	18.2 kg (40 lbs)	20.2 kg (44.5 lbs)

All specifications are subject to change without notice.

SYSTEM BLOCK DIAGRAM



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